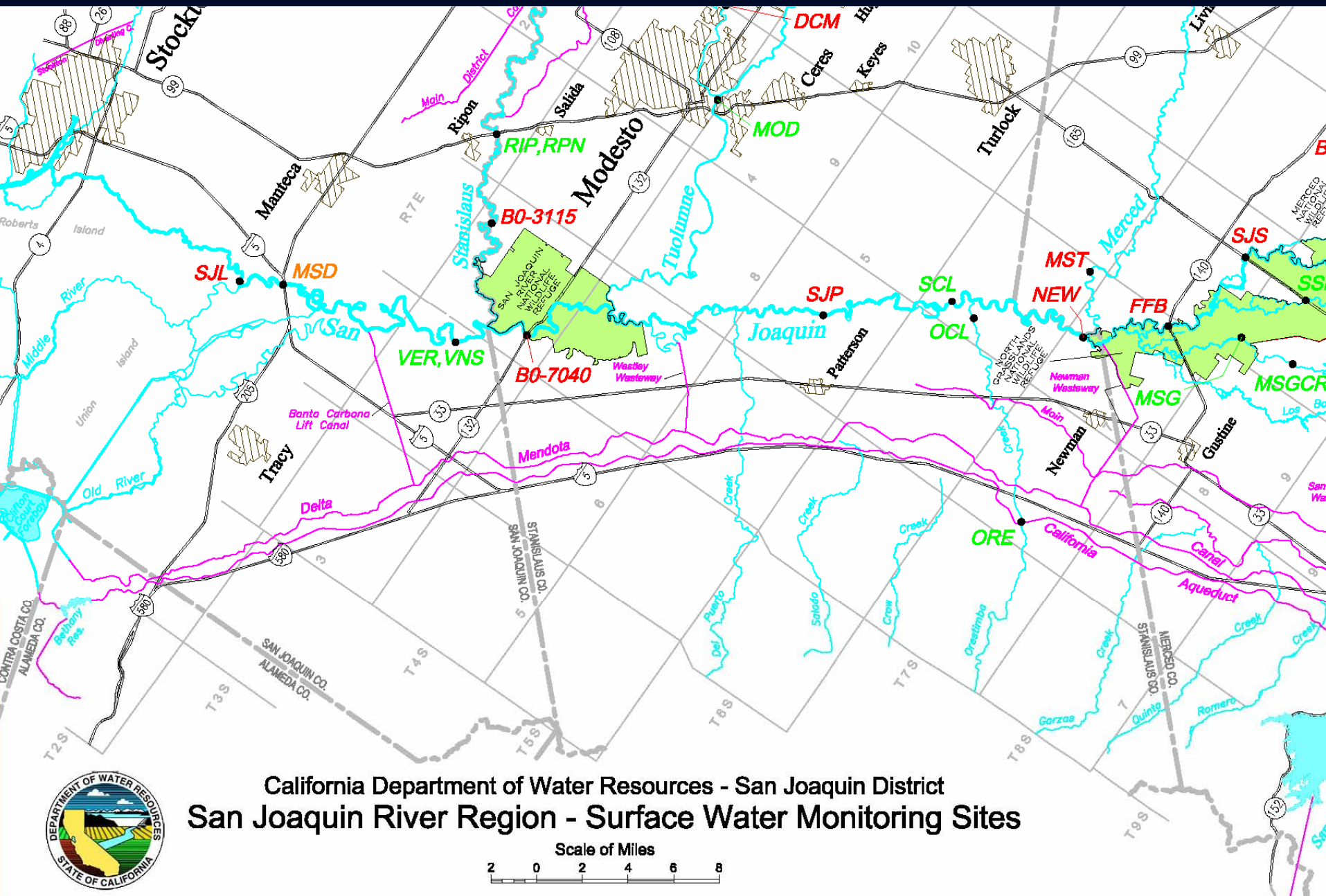
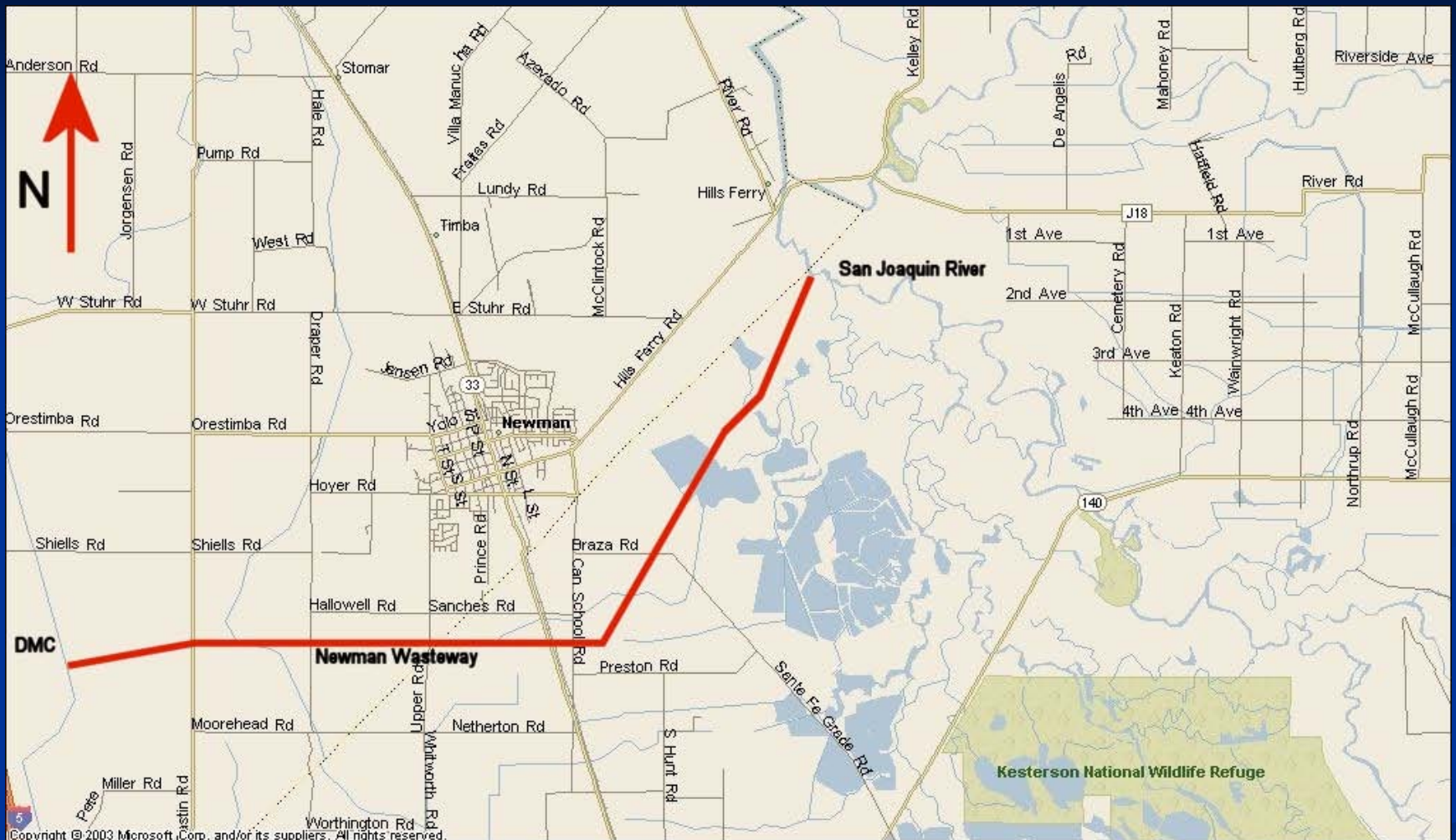


San Joaquin River Recirculation Pilot Study

0600 August 19 -
0900 August 31, 2004







Hwy 33

Wastewater
Treatment Ponds

S.R.

Newman

Newman Westway

DMC

Aerial Photos Circa 1998
from terraserver-usa.com

San Joaquin Recirculation Pilot Study

August 19 – 31, 2004

The Bureau of Reclamation and the San Luis and Delta-Mendota Water Authority conducted a 12 day study to measure the changes in flow and water quality in the San Joaquin River with the release of up to 300 cfs of water from the Delta-Mendota Canal through the Newman Wasteway to the River.

San Joaquin Recirculation Pilot Study

August 19 – 31, 2004

The objectives of the 2004 San Joaquin Recirculation Pilot Study monitoring plan were to:

- Measure the changes in the quality of water in the Newman Wasteway and San Joaquin River caused by the Pilot Study;
- Monitor the changes in stage, flow, and salinity in the San Joaquin River at Vernalis caused by the Pilot Study.

San Joaquin Recirculation Pilot Study

August 19 – 31, 2004

- Reclamation collected samples at four locations in the Wasteway and River.
- Samples were collected every 30 minutes during the first 18 hours to measure contaminants that were “flushed out” of the Wasteway into the River.
- Grab samples were collected every six hours during the second and third days, then once a week.
- Acute toxicity tests were conducted as well.

Time	NW upstream	NW downstream	SJR upstream	SJR downstream
0 hours	Grab: •inorganics •organics	Grab: at 0 hours •inorganics •organics •Ecoli (1,2,3,6 hrs) 1 st composite every 30 minutes 0 to 6 hours •inorganics •organics	Grab: •inorganics •organics	Grab: at 0 hours •inorganics •organics •Ecoli (1,2,3,6 hrs) 1 st composite every 30 minutes 0 to 6 hours •inorganics •organics
6 hours	Grab: inorganics		Grab: inorganics	
12 hours	Grab: inorganics	2 nd composite every 30 minutes 6 to 12 hours •inorganics •organics	Grab: inorganics	2 nd composite every 30 minutes 6 to 12 hours •inorganics •organics
18 hours	Grab: inorganics	3 rd composite every 30 minutes 12 to 18 hours •inorganics •organics •Ecoli	Grab: inorganics	3 rd composite every 30 minutes 12 to 18 hours •inorganics •organics •Ecoli
Day 2, 0 hours	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
6 hrs	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
12 hrs	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
18 hrs	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
Day 3, 0 hours	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
6 hrs	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
12 hrs	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
18 hrs	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
Day 5 or 6	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
Day 11	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
Day 18	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics
Day 25	Grab: inorganics	Grab: inorganics	Grab: inorganics	Grab: inorganics

San Joaquin River Recirculation Pilot Study August 19 – 31, 2004

Parameters of Concern

- Flow
- Temperature
- Electrical Conductivity
- Dissolved Oxygen
- Turbidity
- Total Suspended Solids
- Total Organic Carbon
- Biochemical Oxygen Demand
- Metals
- Hardness
- Nutrients
- E. Coli
- Chlorophyll-a
- Organochlorine Pesticides
- Organophosphate Pesticides
- Carbamate Pesticides
- Triazine Pesticides
- Phenoxy Acid Pesticides

San Joaquin Recirculation Pilot Study

August 2004

- A Quality Assurance Plan was used for the monitoring program to verify lab results and calibrate field equipment.

San Joaquin Recirculation Pilot Study

August 19 – 31, 2004

- We used real-time data from established sites along the River to monitor the changes in stage, flow, and salinity during and after the Pilot Study.
- Most of the data will be from the network of real-time stations operated by the California Department of Water Resources along the River and its major tributaries.
- Other data will be provided by the United States Geological Survey and local water districts.

San Joaquin Recirculation Pilot Study

August 19 – 31, 2004

- Eight new monitoring stations in Patterson and West Stanislaus Irrigation Districts will provide flow and water quality data for minor streams and tributaries.
- Riparian and appropriative diversions occur along the San Joaquin River between Hills Ferry and Vernalis. The largest riparian diverters are Patterson Irrigation District, West Stanislaus Irrigation District and El Solyo Irrigation District. Real-time diversion data from these Districts will be collected for the Pilot Study for river flow loss assessment.

San Joaquin Recirculation Pilot Study

August 2004

Water Quality Monitoring Sites





Delta-Mendota Canal, top of the Newman Wasteway



Bottom of the Newman Wasteway



San Joaquin River upstream of the Newman Wasteway



San Joaquin River near Hills Ferry

8/19/04



0600 August 19 – Opening the Gates on the Newman Wasteway

8/19/04

Initial release of 25 cfs of water into the Newman Wasteway





Release of about 300
cfs into the Newman
Wasteway



August 30, 2004
Newman Wasteway Headworks



August 30, 2004

Newman Wasteway Milepost 0.50

August 30, 2004
Newman Wasteway Milepost 7.0



Newman Wasteway at the San Joaquin River



August 18, 2004



August 30, 2004

San Joaquin River at Hills Ferry

(downstream of Newman Wasteway)



August 19, 2004



August 30, 2004



Collecting a sample from the San Joaquin River downstream of the Newman Wasteway



Measuring EC, temperature, DO, and turbidity



Processing samples, 1000 August 19, 2004

8/19/04



Processing samples, 2030 August 19, 2004

8/21/04

Processing samples, 0215 August 21, 2004



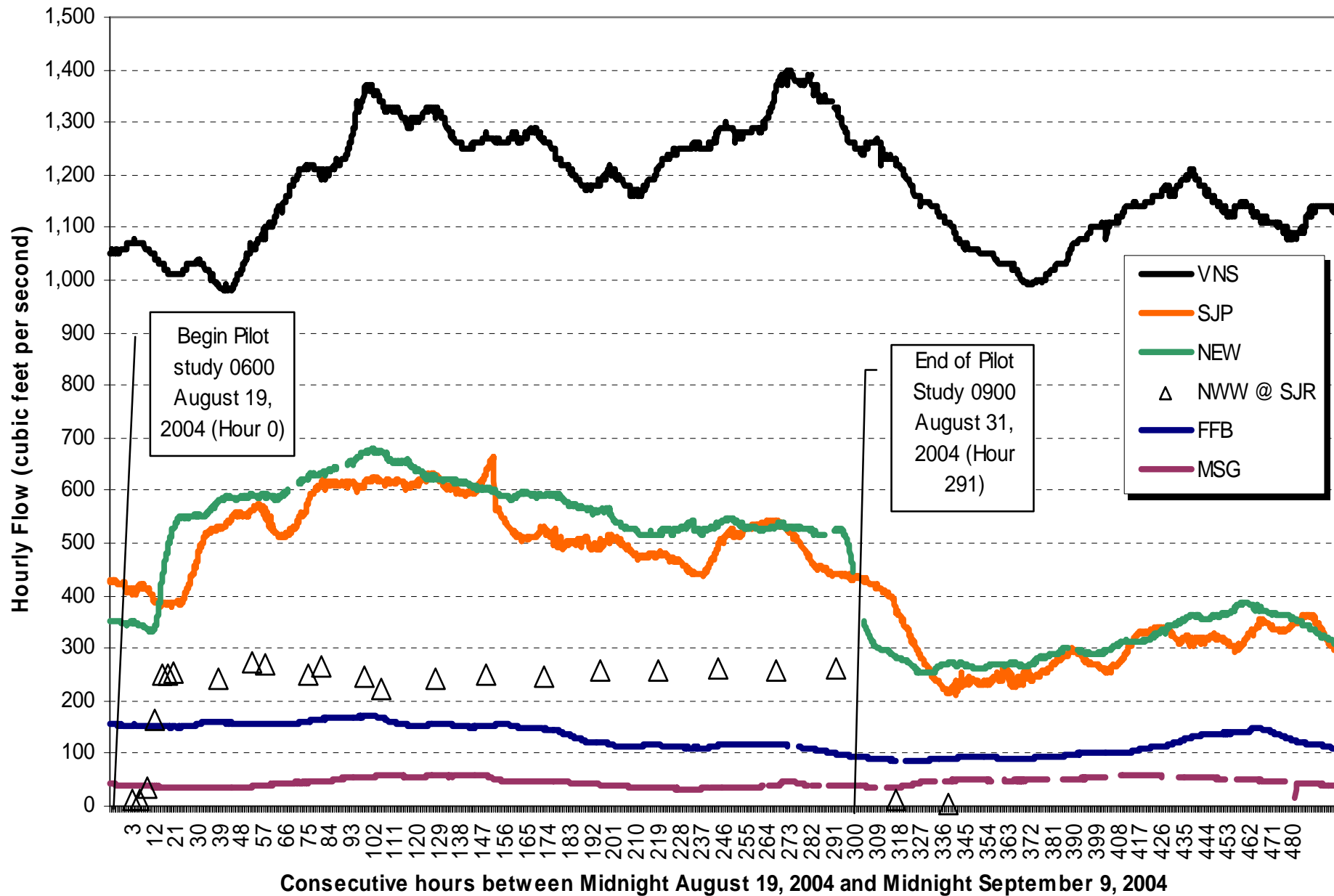
Day One samples

8/20/04



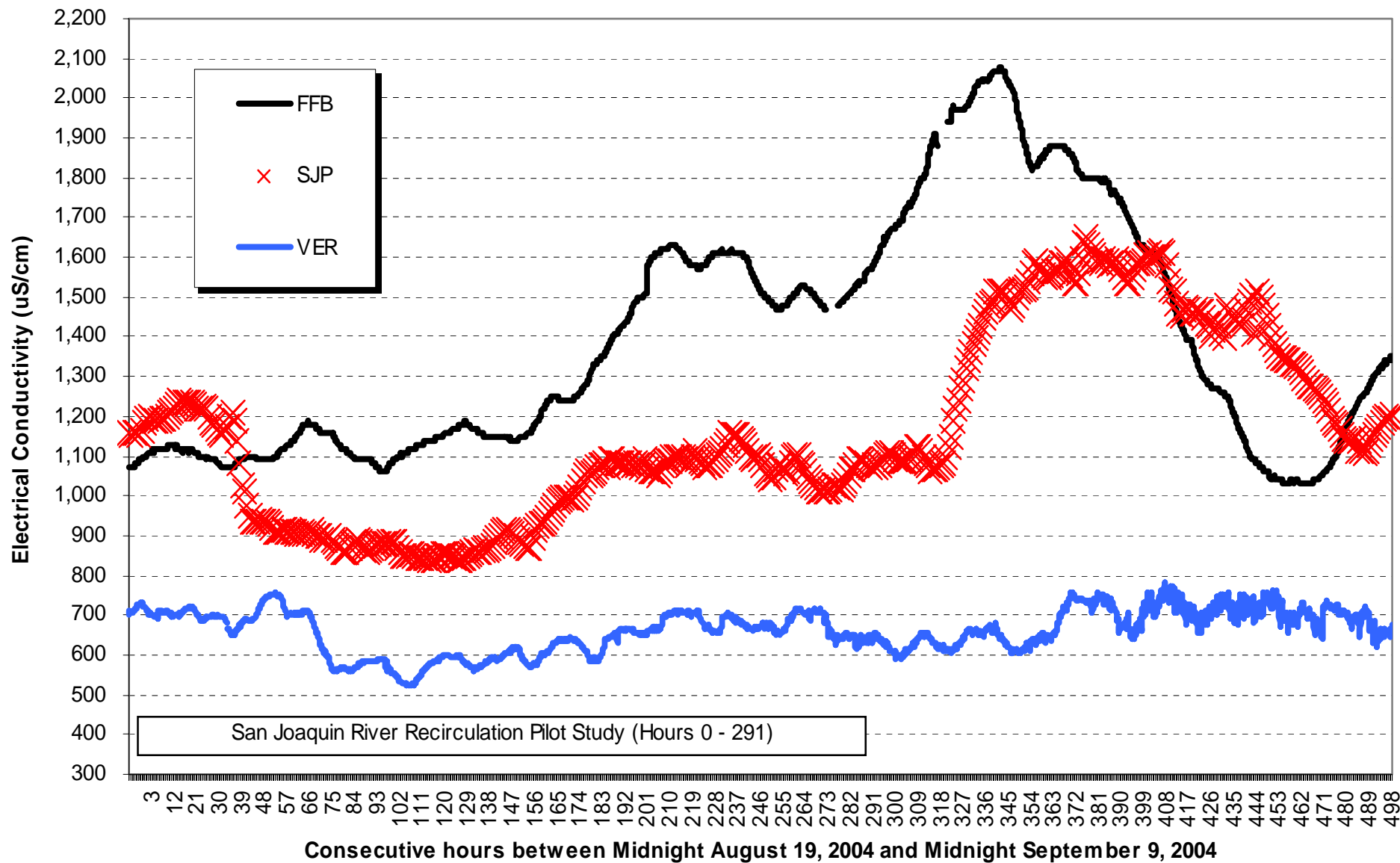
San Joaquin River Recirculation Pilot Study - Comparison of Flows

August 19 - September 9, 2004



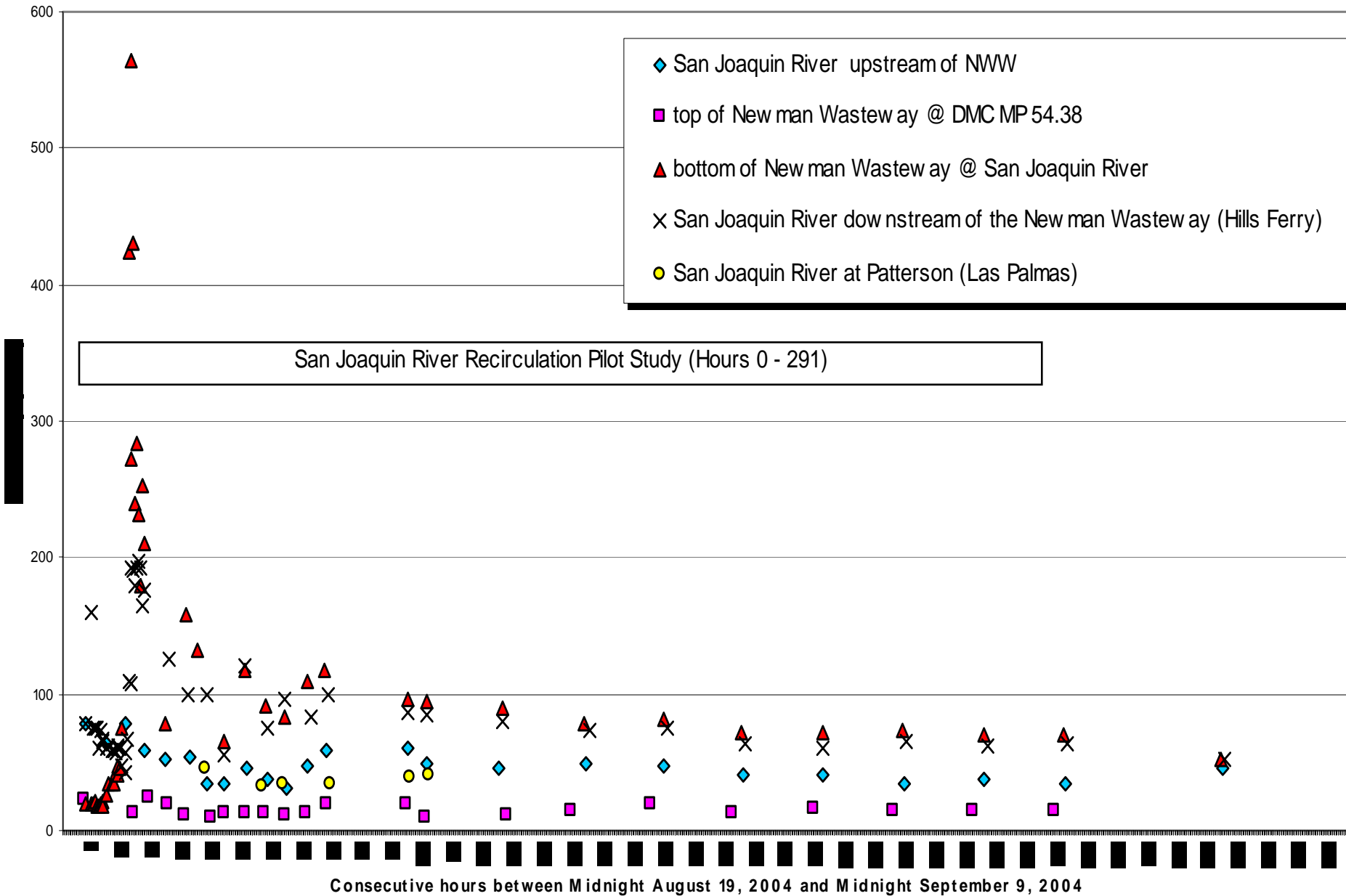
San Joaquin River Recirculation Pilot Study - Comparison of Salinity

August 19 - September 9, 2004



San Joaquin Recirculation Pilot Study - Turbidity

August 19 - September 9, 2004



San Joaquin River Recirculation Pilot Study

E. Coli Production Sample Results

(MPN/100mL)

Site Name	Date	Field ID	Time	Result	R.L.
Newman Wasteway Downstream	08/19/2004	NWW002	06:00	40	2.0
		NWW002A	09:00	50	2.0
		NWW002B	10:00	28	2.0
		NWW002C	14:00	20	2.0
San Joaquin River Downstream	08/19/2004	NWW004	07:50	34	2.0
		NWW004A	09:30	55	2.0
		NWW004B	10:30	56	2.0
		NWW004C	12:00	34	2.0

San Joaquin River Recirculation Pilot Study
Static Percent Survival Aquatic Acute Definitive Test Results
96-hour Percent Survival

Site Name	Date	Time	Flow	Dilution (%)	P. promelas	C. dubia
Newman Wasteway Downstream	08/19/2004	06:00	0 CFS (Background)	6.25	100	90
				12.5	100	100
				25	100	100
				50	100	80
				100	100	70
San Joaquin River Downstream	08/19/2004	06:30		6.25	100	100
				12.5	100	100
				25	100	90
				50	95	90
				100	100	90

San Joaquin River Recirculation Pilot Study
Static Percent Survival Aquatic Acute Definitive Test Results
96-hour Percent Survival

Site Name	Date	Time	Flow	Dilution (%)	P. promelas	C. dubia
Newman Wasteway Downstream	08/19/2004	18:10	Between 100 & 200 CFS	6.25	100	100
				12.5	100	100
				25	100	100
				50	100	100
				100	100	90
San Joaquin River Downstream	08/19/2004	18:30		6.25	100	100
				12.5	100	100
				25	100	100
				50	95	100
				100	100	90

San Joaquin River Recirculation Pilot Study
Static Percent Survival Aquatic Acute Definitive Test Results
96-hour Percent Survival

Site Name	Date	Time	Flow	Dilution (%)	P. promelas	C. dubia
Newman Wasteway Downstream	08/19/2004	24:00	Near 250 CFS @ 22:30	6.25	95	100
				12.5	100	100
				25	100	100
				50	95	90
				100	95	80
San Joaquin River Downstream	08/20/2004	00:30		6.25	100	100
				12.5	100	90
				25	100	100
				50	95	100
				100	100	100

Samples Collected by US Bureau of Reclamation,
Sacramento, California

Toxicity tests conducted by Block Environmental Services, Pleasant Hill,
California

Other results

- 1st BOD and TSS September 13
- 2nd " " September 14
- 3rd " " September 20

- Boron September 14
- TOC September 15
- Selenium September 16
- Metals September 17
- Hg and Nutrients September 17
- Pesticides early October

Newman Wasteway Milepost 2.18



July 29, 2004



September 3, 2004

Newman Wasteway Milepost 6.87



July 29, 2004



September 3, 2004

Newman Wasteway Milepost 7.5



July 21, 2004

Newman Wasteway Milepost 7.5



August 30, 2004

Newman Wasteway Milepost 7.5



September 3, 2004

San Joaquin River Recirculation Pilot Study

August 19 – 31, 2004

The data will be presented to the State Water Resources Control Board and Regional Water Quality Control Board to determine the potential for improvements in water quality in the San Joaquin River as a result of recirculation.

San Joaquin River Recirculation Pilot Study

Data, photos, and report will be posted:

http://www.sjd.water.ca.gov/waterquality/sjr_recirculation/index.cfm